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ABSTRACT

The dissemination of technical information to the third world has been the backbone of first world development efforts in the past decade. This paper examines traditional dissemination-utilization technology transfer models, discusses the meanings and manifestations of development, and points to problems caused by the one-way flow of information from first to third world countries. It then notes that the same adverse effects of unidirectional flow appear in the transfer of technology and identifies systems supporting technical information transfer. Examples are provided of materials developed by commercial enterprises to present technical information to third world countries, and third world concerns about technical information from the first world are listed. Finally, the paper suggests the importance of broadening the scope of intercultural technology transfer to begin developing the capacity of third world countries to design and conduct indigenous communication research to meet the specific information needs of their own people, and it discusses communication research centers and approaches that may be useful for this purpose. A bibliography of related publications is included. (GW)

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The Problems of First World Information for Third World Development: A Need for Communication Research Capability in the Third World

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

by

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CS502 101

Introduction

Information is the heart of any communication system. The dissemination and utilization of technical information (oftentimes referred to as technology transfer) has been the backbone of development efforts in the past decade. There is growing concern, however, that development through standard First World D + U models is not effective and possibly detrimental in uncovering the real problems and needs of the Third World.

Today, we will focus on the role, functions and expectations of technical information in the development process. First, we will review the history of information as a variable and then examine the development process itself. Secondly, we will discuss the flow of information between First and Third World nations and the systems supporting technical information transfer. Thirdly, the characteristics and human concerns of technical information vis-a-vis development will be considered. And finally, after citing the shortcomings of the traditional perspectives, a new emphasis will be outlined and speculation for its capacity to improve future development efforts will be presented.

Information in traditional D+U/technology transfer models

For the early theorists and researchers in dissemination, diffusion, utilization, and development, the term information was subsummed under the more general category of knowledge. The function of knowledge in the process was the "beginning" or starting point in the model. (Rogers and Shoemaker, 1971)

Rogers and Shoemaker show knowledge in a linear relationship with persuasion, decision, and confirmation through their Paradigm of the Innovation Process. (from Rogers and Shoemaker, 1971)

Figure 1

Th efined knowledge as exposure to the "innovation's existence and some understanding of how it functions."

Havelock (1969, 1976) recognized that there were, in fact, differences in knowledge and knowledge characteristics, and drew relationships between knowledge "messages" and "information" as subjective terms. He then developed a typology of knowledge messages as follows:

Overview of Message Types
(from Havelock, et.al. 1969, 76)

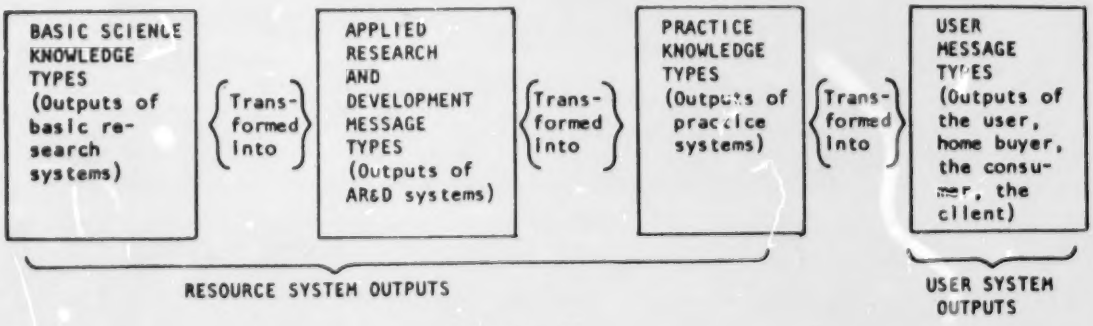

BASIC SCIENCE KNOWLEDGE TYPES (Outputs of basic research systems)
Transformed into
APPLIED RESEARCH AND DEVELOPMENT MESSAGE TYPES (Outputs of AR&D systems)
Transformed into
PRACTICE KNOWLEDGE TYPES (Outputs of practice systems)
Transformed into
USER MESSAGE TYPES (Outputs of the user, home buyer, the consumer, the client)
RESOURCE SYSTEM OUTPUTS
USER SYSTEM OUTPUTS

Figure 2

Under a separate category Havelock listed additional knowledge-message types which fell outside of the four general categories. These are:

1) attitudes, values, and orientations

2) resource identification and retrieval information as a type of knowledge

3) people as knowledge packages

4) media as messages

In this final category we see the beginning of a new focus with resource identification and information technology as media forms in a paradigm change from diffusion and dissemination to technology transfer as an integration of people, hardware, and softwear for moving technology from one point in time and space to another.

In literature that deals with the managing of technology transfer, the term "knowledge" has been replaced by the term "information." Allen (1977) makes the case that information is the "essence" of scientific activity and that technology "consumes information, transforms it and produces a 'product.'" In his theoretical schema, the message (or information) has become the central driving force of scientific and technological development.

Allen's Information-based Management System

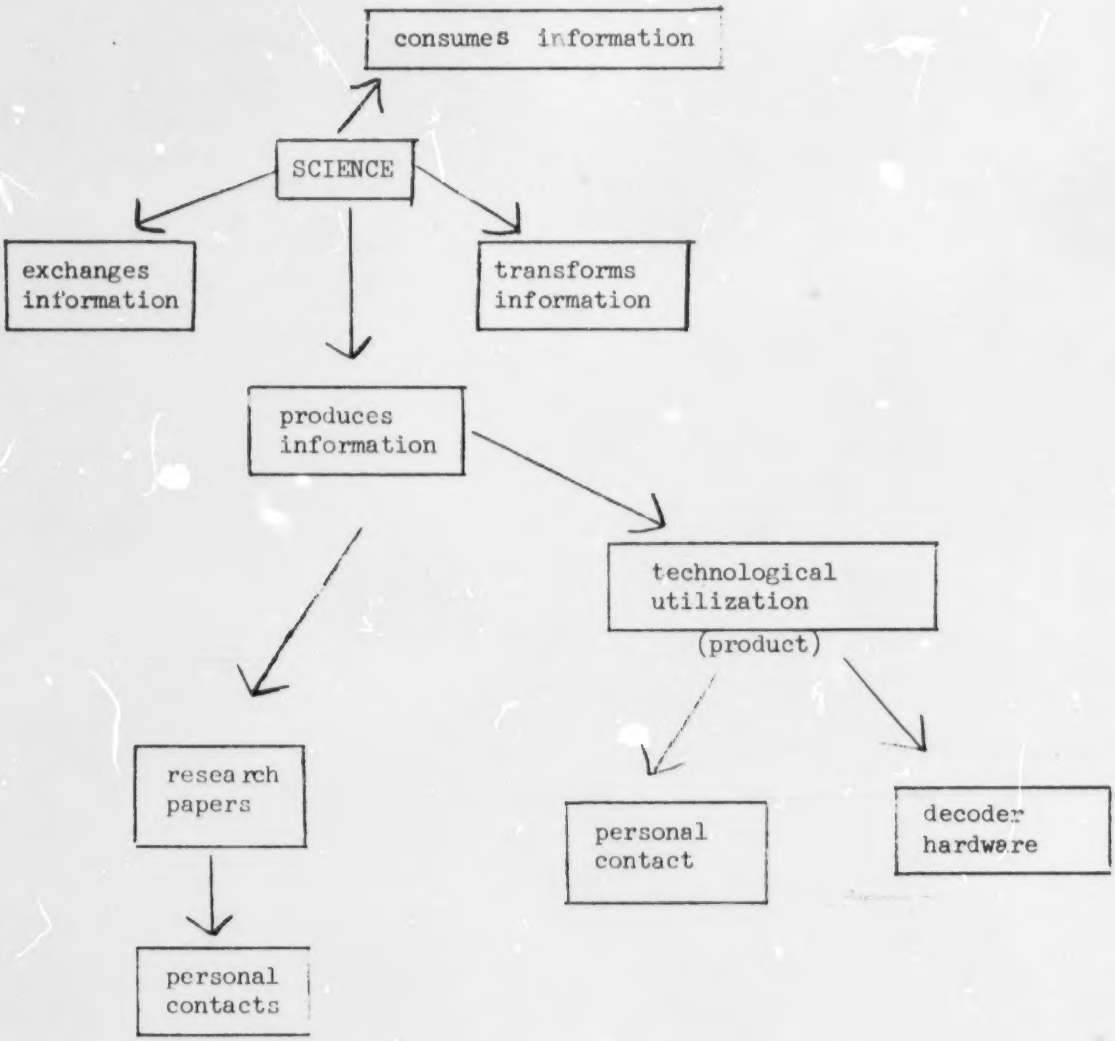


Figure 3

Development: Its Meanings and Manifestations

Change is probably the only characteristic of the development process which is universally recognized. Some people emphasize that innovation must be preceded by a inate desire for change rooted in the individual. (Hair 1961) Others stress the infrastructure required to support and sustain mass development efforts. They speak of the process of development as integral and inextricably interrelated with social structure and direct attention to the dynamic "functional requisites" for development. (Chu 1977)

Recently, the concept of broad-based development, in which the participation of the underprivileged people is encouraged and facilitated, has been proclaimed as desirable and workable. (Owens 1972, Rogers 1977) This concept, "combines economic growth with social justice" and stresses self-determination of the people. Perhaps this is the reason for the lack of a universally accepted approach or model for development. To be meaningful and self-sustained, development must reflect the needs and desires of the people involved and have their full support.*

Information Flow and Development

The one-way flow of information from First to Third World countries has been well documented. A couple of recent statistics illustrates:

> "a survey of 16 Latin American newspapers during a four-day period in November 1975 shows that 80% of the international information they published originated in UPI, AP, Reuters and Agencee France Press." (Somavia 1978)

*other than, for example, the meeting of basic human needs through better utilization of scientific and technological research as mandated by the agenda of the 1979 UN Conference on Science and Technology for Development

The reverse flow, on the other hand, is just as non-existent:

> "a survey of 108 evening news programmes transmitted by three principal U.S. television networks (ABC, NBC, CBS) shows that, of the total coverage, only 20% was dedicated to international news and, of these, only 2.1% referred to Latin America. This amounted to 11 minutes, out of a total transmission time of 54 hours, to cover information about more than 25 countries and more than 300 million people." (Somavia 1978)

This issue, especially when technical information is addressed, leads right to the very nature of the development process. Above and beyond the cost of information to the Third World are the "human and social costs" affiliated with any technology transfer that might occur. (Goulet 1977)

The content and form of information, regardless of modifications to conform to local conditions bears an "ideological imprint" of the sender. (Schiller 1976) The prevailing origin of information is the First World. This produces a cultural domination very similar to colonialism. In fact, "Decolonizing Information" is the title of an article criticizing the First World's monopoly on information. (Thiam, 1975)

Thiam holds some hope for the future, though, and perhaps a recent proposal to establish a "multinational news pool" will provide impetus towards a balancing of the flow of information. (Wren 1978)

Flow of Information and Systems Supporting Technical Information Transfer

More specifically, however, is the issue of technical information transfer.* The same adverse effects of unidirectional information flow appear in the transfer of technology. Wilfredo Clemente, Program Director

*For the most part, "technical information" and "technology" are used synonomously throughout this report with the recognition that certain instances dictate one or the other as more appropriate.

of Special Studies with the Development Academy of the Philippines, views the importation of foreign technology as a "substitute rather than (a) complement (to) technological development."

The systems supporting the transfer of technology in the First World are elaborate and wide ranging. The individual broker, generally a seasoned scientist, engineer or business person in his/her second career is still very much a part of the megasystem offering a personal credibility and flexibility unmatched by computers. The U. S. Federal Government has an extensive computerized technology dissemination system principally through NTIS. And, private industry has a wide variety of computerized systems with many data bases available. (See for example Control Data Technotec, Lockheed Dialog and Dr. Dvorkovitz and Associates.) These data bases, ranging from engineering to science to management (plus all of the social sciences and some services) are being compiled so rapidly that a data base on data bases has been developed. Newsletters of abstracts are also beginning to proliferate.

The search processes for these innumerable documents are receiving more and more attention. With little exaggeration, the First World surely runs on an "information economy." (Porat 1977)

This information economy has greatly increased the inherent value of information. Information is power; the ability to control information gives one the capability to limit access to information. This effectively mystifies the whole system "for those who own the conduits can own what moves through them, becoming a gatekeeper of knowledge, controlling who gets access and at what prices." "Information czars" may very well be appearing on the horizon. (Tourtellot, 1978)

With information such a valuable commodity in the First World, it is not surprising that a declaration of an "information war" was suggested in a recent article in European Community. (Jan. - Feb. 1978) International battle lines have been drawn on volatile issues such as individual privacy, satellite broadcasting and the free flow of information.

Information then has evolved into a resource, a replenishable one, which is subject to modern economic analysis. Horton and Landau (1978) cite the predictions of "information distribution grids." They have also developed an information resources management plan which views the computer as a "powerful tool...but not the central focus."

Within this framework, accuracy, reliability, relevancy, availability, usefulness and cost are all important dimensions of information. The information science discipline has developed measures for precision (the percentage of information items retrieved that are relevant) and recall (the percentage of relevant information items in the collection that were received.) Various measures for the other dimensions have also been developed.

Characteristics and Human Concerns

The First World's information economy has nurtured the development of various information services including marketing systems to sell information for a profit. Figure 4 represents one page of an eight page, glossy-cover brochure providing an overview of Control Data Technotec's computerized technology exchange system. Figure 5 is a facsimile of output from a technology licensing service developed by Dvorkovitz and Associates.

Alternative approaches have taken the format of catalogues and handbooks. See for example Liklik Buk, New Guinea; Alternative Technology Directory, India; and The Village Technology Handbook, for and by Peace Corp Volunteers. See Figure 6 for an excerpt from Liklik Buk.

Figure 4

Now <u>you</u> can use a billion-dollar worldwide computer system

to quickly find what you need to solve problems and increase your profits...ideas, people, products, processes...the kind of technological information and assistance rarely available from standard sources...it's a unique, incredibly economical and easy-to-use service from Control Data Corporation...it could totally revolutionize the way you plan your buying, selling and R & D. **Its name is "TECHNOTEC."**

Users worldwide can search the TECHNOTEC data base via computer terminal, TWX or Telex terminals using local telephone connections in most major cities...those who do not have terminals available can obtain a search from **TECHNOTEC** and receive results by mail or telephone for a modest surcharge.

11

Figure 5

18-FOOD - PROCESSING, FLAVOUR ENHANCERS, NON-NUTRITIVE SWEETENERS

REFERENCE NO. A1984 VERSION---5 MARCH 25, 1976

TITLE- BREAD INCLUDING LARGE AMOUNT OF NON-WHEAT PROTEIN.

LICENSOR--
INTERNAT'L FOOD TECHNOLOGY INC
BOX 3891
GREENVILLE, DE.

USA
DR. ROBERT B. CAVANAUGH
VICE PRESIDENT

ORIGINATOR--
INTERNAT'L FOOD TECHNOLOGY INC
BOX 3891
GREENVILLE, DE.

DESCRIPTION--
DETAILS ARE IN THE SPECIFICATION OF U.S. 3,756,832, WHICH SHOWS 14 EXAMPLES. IN BRIEF, BREAD DOUGHS ARE MADE AS IN COMMERCIAL BAKERY PRACTICE, BUT WITH FORMULA ADD-ONS OF 2-6 PARTS OF CORN FLOUR (OR MEAL) & 6-12 PARTS OF SOY FLOUR, PEANUT FLOUR OR FISH-PROTEIN CONCENTRATE (COMBINATIONS OF BEAN PROTEIN & FISH PROTEIN) PER 100 PARTS OF WHEAT FLOUR. FLAVOR IS UNIQUE, BUT NOT OF CORN OR SOY, ETC. TEXTURE 'RICH' WITH MORE 'BITE RESISTANCE'. MAKES VERY SUPERIOR TOAST. GOES STALE MORE SLOWLY THAN DOES STANDARD BREAD. CRUMB IS SLIGHTLY YELLOW, AS IF IT CONTAINED WHOLE EGG.

MAIN USE--
MANUFACTURE OF BREAD & ROLLS IN COMMERCIAL BAKERIES FOR DISTRIBUTION THROUGH EXISTING MARKETING SYSTEMS.

MAIN ADVANTAGES--
GIVES BAKED GOODS OFFICIALLY JUDGED BY U.S. FDA-COMPLIANCE NOT TO PURPORT TO BE THE STANDARD (BREAD) FOOD. HOWEVER, DEPENDING ON THE EXACT FORMULATION, WHOLESALE PRICES OF THESE 'SPECIALTIES' CAN BE AS LOW AS (OR ONLY 1-2 CENTS ABOVE) STANDARD-BREAD PRICE. OUTPERFORMS STANDARD ONES BIOLOGICALLY BY AS MUCH AS 4-1 IN PROTEIN EFFECTIVENESS

DEGREE OF DEVELOPMENT-- PRODUCTION

ECONOMIC DATA IS AVAILABLE

KNOW-HOW IS AVAILABLE

SECRECY AGREEMENT IS NOT REQUIRED

PATENTS--
USA 3756832 DOM. REPUBLIC 2,095

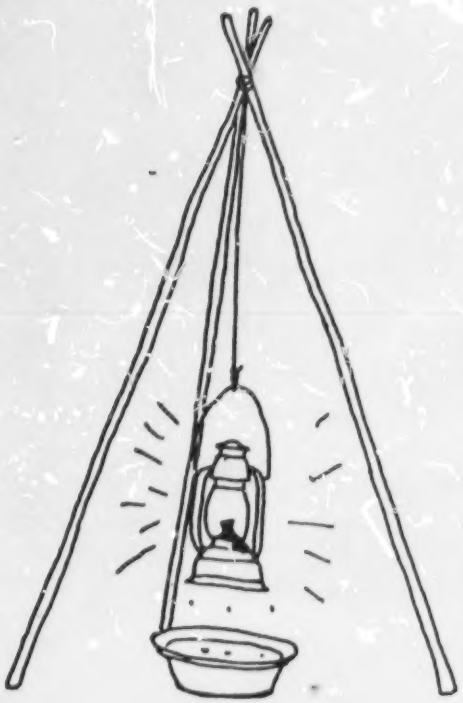
TYPE OF LICENSE-- OPTIONAL

ARGENTINA	1 2	CANADA	1	ISRAEL	1 2
JAPAN	1 2	MEXICO	1	SOUTH AFRICA	1 2
UNITED KINGDOM	1	U.S.A.	1	VENEZUELA	1 2
JAMAICA	1	DOM REPUBLIC	2		

KEY TO ABOVE CODES IS AS FOLLOWS--
1-PATENT PROTECTION 2-AVAILABLE FOR LICENSE 3-LICENSED AND/OR COMMERCIALIZ

** PLEASE NOTE - PRELIMINARY INFORMATION ONLY. ADDITIONAL DETAILS AVAILABLE FROM EITHER THE LICENSOR OR DR. DVORKOVITZ + ASSOCIATES

Figure 6



INSECT TRAP

This catches insects that like to fly at night to a light. You catch many insects that feed in the daytime and are fooled to think it is daytime. It is good for many rice pests.

Materials needed: 1 kero lamp (about K2.00) 3 bush sticks, a little twine, and 1 basin. These may be bought at most trade stores, or perhaps you already have them.

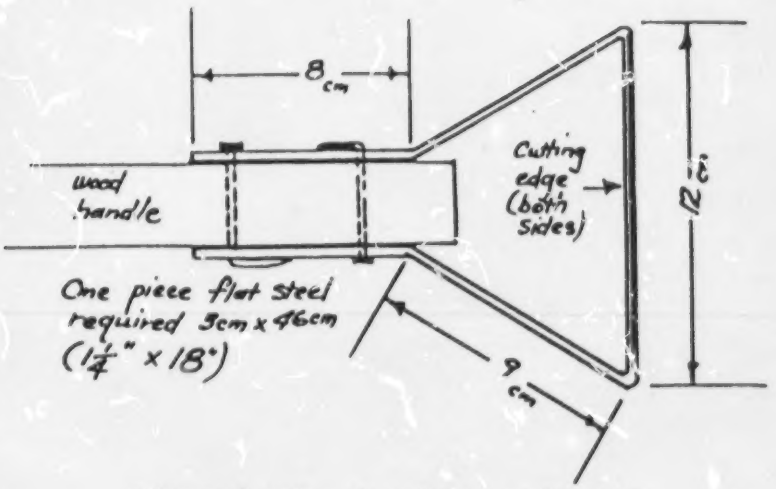
Tie the three sticks at one end to make a tripod and hang the lamp, and fill the basin with water. Let the lamp burn during the night. Insects fly against the lamp and fall in the water. A little kerosene in the water will insure that they will die quickly and not get away, and the glow of the kerosene attracts the insects.

Use a lamp big enough to burn the whole night. Don't let anyone steal your lamp!

HAND WEEDER

This simple and highly effective weeding tool can help to eliminate a lot of stoop labour and kneeling.

It can be made from a 46 cm(18") section of certain sariff materials or other metal. It is important to select stock that can be bent sharply without heat and without breaking. Discarded heavy duty banding material and 1¼" wide galvanized hoop iron will work.



Mild steel works, since the triangular shape gives the weeder rigidity.

Bend and punch holes as shown.

After bending the tool and punching the holes, a strong wood handle about 3 cm in diameter is attached with flat head 2" nails, bent over.

Finally, both sides of the cutting edge are sharpened.

The tool is operated with either a pushing or a pulling stroke, or a push-pull stroke. A light pressure is applied to hold it to the ground. It is especially suitable for dry rice, vegetables, corn, peanuts, and pineapples. It is most effective when used on young weeds which can be cut without chopping.

B. Pulpulis, Box 49, Kavieng, NIP.

These materials, which were envisioned to supplement the governmental, non-governmental and corporate development efforts, are continuously updated by the readers. The information is presented (diagrams, pictures and simple instructions) in an easily understandable form.

The use of these materials for presenting information not only reflects the lack of general availability of high technology information systems, but of different values and social patterns operating in the Third World. Rosenbloom and Wolek (1970) have found "that the propensity to use alternative types of sources for technical information is related to the purposes which give meaning to the use of that information." The interactive nature and user orientation of the catalogues (shown in Figure 6) represents a closed system of operationally-directed information. This system provides a direct linkage with user needs and indigenous sources of information. Though readily useable and relevant, this information is limited, for the most part, to existing technologies.

The purpose of these catalogues is to make information accessable and to stimulate widespread usage within country or region. In part, this expectation has been realized. On the other hand, these catalogues tend to foster a "closed system." There is a stigma attached to them because the information is perceived to be of a pedestrian nature. Some Third World countries are now demanding more sophisticated technology packages, complete with guarantees.

These demands are, for example:

1) that the acquired technology is the proper one for the manufacture of the products covered by the agreement

2) that such technology will permit a certain level of production

3) that the transmitted technology is full and complete, covering all the purposes in the agreement. (Soberanis 1976)

Another reaction to this "closed system" has been to procur technical information through people. Many students and research fellows come to the First World every year to learn and return. Returning, however, has been a problem as many graduates prefer to stay in the First World thus contributing to a "brain drain."

The Third World, also has serious concerns about technical information from the First World. Some of these are:

1) Will the acquisition of foreign technology impede the development of indigenous technology?

2) Will these imports breed dependence?

3) What changes in values, social structure and culture are associated with imported technology?

4) Where will all of this lead? Will the Third World be perpetually one step behind if development is promoted by such transfers of technology?

And, within the context of a participatory, broad-based development effort, these concerns loom ominously in the future. For the information systems of the First World may be imported, but the output, generated and organized by the First World, is largely unusable for the majority in the Third World, particularly the rural poor.

New Emphases

What has been shown in our examples above is a classical instance of bypassing in the literature of communication. A solution is one that has a simple yet unrealized potential.

It is that instead of the exportation of "technical assistance," technical information, and/or technology itself, an understanding and a

capacity to do soci al-psychological research in behavioral science, specifically communication, be the first and the most essential technical information to be disseminated. (Saint and Coward 1977)

Roberts and Frohman (1978) explain why we must begin with the capacity to understand the processes of communication before innovation can occur:

> New information produces no commitment to an opportunity, no skills to exploit the opportunity, nor any conviction as to the benefits of exploiting it. All of these are necessary for eventual trial and adoption of an innovation, and the willingness to entertain change.

Bryan, et.al. (1975) provide a methodology in their Trans-Cultural Study Guide that state the premise well:

> ...direct observation...when compemented by systematic inquiry, can lead to a clearer perception of another culture and people.

Clearly there is little capacity in Third World countries for such systematic inquiry in areas such as needs assessment or audience analysis.

Cees Hamelink and others explored the proposal directly in their 1976 Geneva seminar: Communication Research in the Third World (1976):

> In the area of communication an even more sophisticated form of foreign domination seems to me the domain of social research in communication...it is striking how much...this research has been defined by western expertise.

The Conference defined Third World needs in communication research as follows:

1) lack of trained researchers

2) lack of innovative research methodology

3) lack of awareness of the need for research

4) lack of resources

Luis Beltran (1975) has summarized the conflicts involved in conducting communication research with procedures and priorities as well as researchers

from other cultures. He illustrates that the classic diffusion research model is based upon an ideological framework that contradicts the social milieu of many third world countries and regions.

How vitally important it is therefore to broaden the scope of development and intercultural technology transfer to begin with the capacity within Third World countries to understand, develop theory, plan methods, design instruments, and conduct communication research to meet the special information needs of people in their own cultures and communities.

Recent legislation in the U.S. Congress has established a new direction for assistance to foreign countries. Known as Title XII of the Foreign Assistance Act,it stipulates iniatives in the areas of food production, education, and research for expanded food supply in lesser developed countries. An important clause of the Bill is:

> Research shall take account of the special needs of small farmers, shall include relationships among technology, institutions, and economic and social factors, and shall include emphasis on dissemination of research results to farmers, especially small farmers. (Huston, 1976)

If these and other objectives of development are to be met, the "special needs," "relationships," and "social factors," will have to be accessed by behavioral scientists indigenous to Third World countries who have the capability to conduct such communication research.

The potential for the development of in-country expertise is only partially in place. For example, the following communication research centers may already be capable of launching basic needs assessment and information research:

Institute of Mass Communication
University of the Philippines

Institute of Mass Communication
University of the West Indies

Social Communication Program
Catholic University at Asuncion
Paraguay

Communication Program
Federal University, Brasilia
Brazil

Communication Program
Javeriana University
Columbia

Communication/Journalism Program
University of Indonesia

Communication Program
Kagul University
Afghanistan

The opportunity for exchange of scholars through such agencies as the Council for International Exchange of Scholars (11 Dupont Circle, Washington, D.C. 20036) is one way that communication research capabilities can be enlarged and strengthened.

Another approach is the establishment of a consortia of communication research centers or institutes drawing together such research programs as Stanford, East-West Institute, Minnesota, and others with those in Third World countries such as the Institute of Mass Communication at the University of the Philippines.

Finally, both private and federal agencies can provide the mechanism and the funding for programs of development that includes "institution building" in behavioral research with a goal that Third World countries have the capacity and the skills to develop theory, formulate hypotheses, and conduct their own research in communication to more accurately assess the needs and the resources to meet their expectations for scientific and technical information and technology transfer.

Bibliography

1. Allen, I. J., Managing the Flow of Technology, MIT Press, 1977.

2. Beltran, L. R., "Research Ideologies in Conflict," in Communication Research in the Third World, Lutheran World Federation, 1976.

3. Bryan, G., et.al, eds., Transcultural Study Guide, Volunteers in Asia, 1975.

4. Chu, G. C., Radical Change Through Communication in Mao's China, The University of Hawaii Press, 1977.

5. Clemente, W., "The Growth of Technology in the Third World," Breakthrough, January, 1976--cited from review in The Futurist, April, 1977.

6. Coombs, P. H. and Ahmed, M., Attacking Rural Poverty, The Johns Hopkins University Press, 1974.

7. Eckaus, R. S., Appropriate Technologies for Developing Countries, NAS, 1977.

8. Economic and Social Council of The United Nations, Agenda of UNCSTD, U. N., December 21, 1975.

9. Goulet, D., "The High Price of Technology Transfers," Interciencia, March-April, 1977.

10. Hamelink, C., "Some Thoughts for the Agenda," in Communication Research in the Third World, Lutheran World Federation, 1976.

11. Havelock, R. G., Planning for Innovation, Institute for Social Research, 1969.

12. Horton, F. and Landau, R. M., Pre-conference Advertisement, Information Times, March, 1978.

13. Huston, Keith, "The New Direction in U. S. Foreign Assistance," unpublished papers of the Minnesota Agricultural Experiment Station, St. Paul, MN., June, 1976.

14. Jegnier, N., "Appropriate Technology Problems and Promises," OECD, 1976.

15. Liklik Buk, Liklik Buk Information Centre, 1977.

16. Nair, K., Blossoms in the Dust, Praeger Publishers, Inc., 1962.

17. Owens, E. and Shaw, R., Development Reconsidered, Lexington Books, 1972.

18. Porat, M. U., The Information Economy: Definition and Measurement, U. S. Department of Commerce, 1977.

Bibliography

19. Roberts, E. B. and Frohman, A. L., "Strategies for Improving Research Utilization," Technology Review, March-April, 1978.

20. Rogers, E. M. and Rogers, R. A., Communication in Organizations, The Free Press, 1976.

21. Rogers, E. M. and Shoemaker, F. F., Communication of Innovations, The Free Press, 1971.

22. Rogers, E. M., Ed., "New Approaches to Development," special section in Journal of Communication, Winter, 1978.

23. Rosenbloom, R. S. and Wolek, F. W., Technology and Information Transfer, Harvard University, 1970.

24. Rozsa, G., "The Great Illusion," Ceves, September-October, 1975.

25. Saint, W. S. and Coward, E. W., "Agriculture and Behavioral Science: Emerging Orientations," Science, August 19, 1977.

26. Schiller, H. I., Communication and Cultural Domination, International Arts and Sciences Press, Inc., 1976.

27. Scriven, L. E. and Aris, R., Aspects of Technological Development, University of Minnesota, 1974.

28. Soberanis, J. A., "Technology Transfer and Development," in Technology Transfer and Development: An Historical and Geographic Perspective, Driscoll, R. E. and Wallender, H. W., FMME and CoA, 1974.

29. Somavia, J., "An End to Slanted News," Development Forum, January-February, 1978.

30. Thiam, M. M., "Decolonizing Information," Ceves, September-October, 1975.

31. Tourtellot, J. B., "A World Information War?," European Community, January-February, 1978.

32. Village Technology Handbook, VITA, 1975 edition.

33. Wren, C. S., "American Suggests News Pool to Cover 3rd World," The New York Times, Sunday, April 9, 1978.